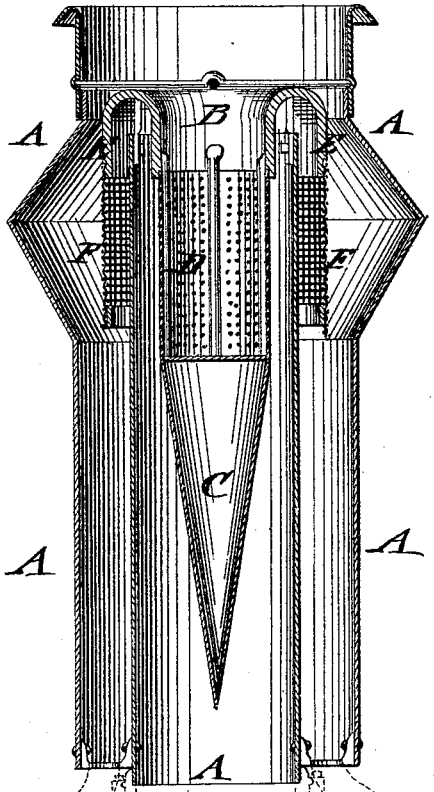
S. SMITH.

SPARK-ARRESTER.

No. 184,437. Patented Nov. 14, 1876.



WITNESSES:

Francis M. Gentle.

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UNITED STATES PATENT OFFICE.

SIMON SMITH, OF MAUCH CHUNK, PENNSYLVANIA.

IMPROVEMENT IN SPARK-ARRESTERS.

Specification forming part of Letters Patent No. **184,437**, dated November 14, 1876; application filed August 28, 1876.

To all whom it may concern:

Be it known that I, SIMON SMITH, of Mauch Chunk, in the county of Carbon and State of Pennsylvania, have invented a new and Improved Spark-Arrester, of which the following is a specification:

The accompanying drawing represents a vertical central section of my improved spark-arrester for locomotive smoke-stacks.

The invention relates to an improved spark-arrester for locomotive smoke-stacks, by which the exhaust-steam is allowed to escape freely without choking up the stack, and also the sparks are conducted by suitable pipes to the dirt-box to be let out by the engineer.

The invention consists of a smoke-stack made of an inside and outside stack, in connection with a deflecting cone that extends down into the inner stack, and a wire netting above the same, and with an annular top conductor and outer setting, as will be more fully described.

In the drawing, A represents a locomotive smoke-stack of straight, diamond, or other shape, which is constructed with an inside and outside stack, and an annular space between the same. To the top part of the inner stack is attached, either by rivets, cross-bars, or otherwise, a cone attachment, B, which is extended partly downward into the interior, and partly around the outside of the inner stack. The cone attachment B extends to suitable depth into the interior of the stack, and terminates at the lower end with a tapering deflector, C, against which the exhaust steam and sparks strike in their upward motion. Above the deflecting cone C is arranged a cylindrical wire netting, D, through which the steam escapes to the outside, while the sparks are passed up to the annular top part E of the cone B, which is of semicircular or other cross-section, and extending at suitable height over the edge of the inner stack, so as to form a conducting channel or passage for the sparks to the outside of the stack.

Below the top part E is again arranged a cylindrical wire netting, F, through which any steam carried around to the outside may escape, while the sparks drop down in the space between the inside and outside stacks to pipes communicating with the dirt-box, from which they can be let out at the will of the engineer.

The tapering deflecting cone C that extends down through the inner stack divides the steam and sparks gradually while passing up through the stacks, and avoids thereby the difficulty arising from the reaction of steam and sparks in other spark-arresters by the direct impact of the steam on the horizontal bottom of the steam-escape. The deflecting cone secures thus a free escape of the exhaust steam and a free draft for the fire.

The interior netting above the deflector allows the escape of the exhaust steam in a sidewise direction without impairing the direct upward force of the exhaust steam that carries the sparks to the top part, and then over the inner stack to the outside stack, where they are dropped and conducted off, as described.

The wire nettings D F may be replaced by cylinders of perforated sheet or cast metal, if desired.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

A double-walled spark-arrester, provided with a perforated pipe, having solid conical deflector C at the lower end, and the other attached to a solid concave ring having open central steam-passage, as shown and described, whereby a passage is furnished for the exhaust steam and smoke directly to the air, while the sparks are trapped and returned between the inner and outer walls.

SIMON SMITH.

Witnesses:
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